

Dr. Simpson
SANITARY REFORM.

Wm. Newton
Camp
WATER-CLOSETS

VERSUS

PRIVIES,

PRACTICALLY CONSIDERED IN REFERENCE TO
MANCHESTER AND SALFORD:

BEING THE SUBSTANCE OF A PAPER READ BEFORE THE MANCHESTER
AND SALFORD SANITARY ASSOCIATION,
JANUARY 29, 1869.

BY
JOHN NEWTON, M. INST. C. E.



SALFORD:
THOMAS WALKER, 16, BANK PARADE.



WATER-CLOSETS *versus* PRIVIES.

THE subject which I have undertaken to bring before you this evening has already, on various occasions, occupied the earnest attention of this Association. The importance which at the present time attaches to it, must be my apology for again introducing it.

Common privies are by many people viewed as a necessary evil. That they are an evil, and, moreover, one of the greatest magnitude, I maintain. That they are a *necessary* evil I emphatically deny, and I will endeavour to show, first, their baneful effects upon the health and well-being of society; and, secondly, the advantages which the water-closet system offers.

A few words, in the first place, descriptive of the existing state of things. Privies are ordinarily built alongside, and partially over, the ashpits. These latter are three to four yards long, one to two yards wide, and three to six feet in depth. With very few exceptions, they are uncovered, and thus admit rain and the water which falls upon, and from, the roofs of the adjoining privies. In the majority of cases no drainage whatever is provided, and where it is otherwise, an untrapped opening exists in the side wall, in lieu of a properly protected and trapped drain in the bottom. They are generally in close proximity to dwelling-houses—at most a few yards distant—and sometimes on ground curtailed from the cottage sites, with sleeping-rooms above. Ashpits are the recognised receptacles of ashes, faecal matter, broken crockery, cockle-shells, and every description of

solid and liquid filth which cannot be otherwise disposed of. The exhalations from them are, as might be expected, most offensive, and, to those who ordinarily breathe an unpolluted atmosphere, indescribably sickening. In suburban districts such places may be tolerated, though not excused; but in the midst of densely populated localities they are a disgrace to modern civilization, and an abomination as repulsive to the higher feelings of humanity as can well be conceived. Some years ago the late Dr. Southwood Smith spent a few days in examining the city of Manchester, and afterwards penned these pathetic and memorable remarks: "This inspection of Manchester has been a very melancholy labour. It has been so partly from the sense of physical weakness—the distressing though transitory feeling of indisposition invariably felt after a few hours of such work, a feeling increasing day by day—but far more from the mental depression caused by the sight of the discomfort and wretchedness of so many thousands of the people who might be healthful and happy, and who would be so if the richer classes, whether in authority or not, would give some small but earnest and intelligent attention to the condition of the creators of their enormous wealth."

In the city of Manchester alone we have nearly 50,000 privies, with ashpits connected therewith, covering an area, in the aggregate, of 25 acres. To comprehend this more clearly, it may be stated that the space so occupied is equal, in extent, to the district extending from Piccadilly to Deansgate, and from Market Street to King Street; or it may be stated that the new Town Hall site occupies but one-twelfth of the area covered by the Manchester middens. If we imagine a dozen manure depôts in the heart of Manchester, each equal in extent to the Town Hall site, and consider that 10,000 tons of night-soil and ashes are annually carted from each, we shall obtain but an imperfect idea of the magnitude of the evil under consideration. Unfortunately, in a sanitary point of view, they are not in open situations, but in small confined back-yards, surrounded by high brick walls, and in

courts and blind alleys where the winds of Heaven cannot possibly reach them. A close, fetid atmosphere, in consequence, surrounds them, and so offensive is this that the cottage windows overlooking them are never opened, and the back-doors as seldom as circumstances will permit.

There are nearly 70,000 dwellings in Manchester, more than 50,000 of which are cottages at, and under, 4s. per week rental. The bye-laws of the Manchester Corporation require a space of less than eight square yards left open as a yard in connection with each new house, and the Salford Corporation require the same; but a very large proportion of the old houses in both the City and Borough have yards very little larger than the ashpits themselves.

The effect of this state of things upon the health of the community must necessarily be prejudicial. It is all but universally admitted that dirt and disease go hand-in-hand, and the high death-rate in towns, as compared with country districts, is mainly due to the existence of a stagnant atmosphere, *polluted by the pestilential emanations from faecal matter retained in the ashpits*. The periodical reports of the Registrar-General prove this. In the Borough of Preston I noted, for several years, the varying rates of mortality which prevailed. In the close and densely populated localities the death-rate ranged from 35 to 40 per thousand, whereas, in the outskirts and more open parts, inhabited by people of the same class, the ratio was little over 30 per thousand, the average of the entire Borough being 29 per thousand. The death-rate in Salford between 1851 and 1861 was 29 per thousand; in Pendleton, 21; and in Broughton, 14. It must be admitted, in this case, that the comparison is not a legitimate one, the social position of the inhabitants being dissimilar; the superior attention and medical skill which the wealthy are able to procure, undoubtedly diminish the chances of attack and the fatality of disease where it is developed. The elaborate returns prepared annually by Mr. Pickering are better evidence, and show clearly a much higher death-rate in closely built parts of the Borough

than in the more open districts. Whilst the average of the Salford district is 29, some portions attain 40, 50, and even 60 per thousand! Density of population alone is not responsible for this fearful fatality—neither is it a necessary sequence of poverty, as we find in the worst parts of London, occupied by the poorest of the poor, a lower death-rate existing. But London has its soil-pans and Salford its privies; hence the difference.

Impure as are our rivers in their windings through Manchester, and pestilential as are their exhalations, the stagnant noisome atmosphere of our cottage yards is infinitely worse. In the former, free currents of air act upon and diffuse the poisonous gases evolved, but in the latter the only current which can be created is not unfrequently by means of the kitchen fireplace.

Inquiries have been instituted on several occasions with a view to ascertain the effect of our sewer rivers upon the health of the community. In no case has it been proved that the death-rate in their vicinity exceeded the death-rate in adjacent districts; on the contrary, the results rather tend to an opposite conclusion. The correct inference is, not that the river regions are healthy, but that they are not more unhealthy than the districts with which they are compared; in short, that the exhalations from the rivers are not more fatal than the concentrated stench from the ashpits. It is no uncommon thing to find cottage windows overlooking the rivers open, but not so with the windows of inland cottages, where it may be said the breath of Heaven never enters. No wonder that the inhabitants prefer a close unventilated apartment to the disagreeable odour from the ashpits.

Let it not be understood that I defend the cesspool condition of our dirty rivers. They are undoubtedly a cause of incalculable misery, yet, whilst they slay their thousands, the ashpits slay their tens of thousands. In support of these views, a volume of medical evidence might be adduced. I will content myself, however, by reminding you of the "*Memorial of the Medical Officers of Unions*,"

addressed "*to the Committee of the Manchester and Salford Sanitary Association, in the year 1858.*"

"We, the undersigned, being Medical Officers of the respective Unions to which our names are attached, certify, from our own knowledge and experience, that the open ashpits and middens connected with privies in the low and crowded neighbourhoods with which we are connected, have, from their malarious influence, been the frequent occasion of fevers and the pabulum of epidemics."

Signed by the twelve Medical Officers of the Manchester, Salford, and Chorlton Unions.

But the baneful effects of the present midden system are not limited to the body, they affect the minds and morals also. A young couple commence their married life in a cottage otherwise clean and comfortable; at first the wife endeavours to make her house a happy home, but the filthy state of things outside deadens her sense of decency, and the foul smells which, despite her efforts, will find entrance to her little dwelling, soon debilitates and destroys her energies. It is painful to see people of cleanly habits thus striving against filth over which they have no control; the wife becomes indifferent and dirty, and the husband in consequence too often resorts to the cheery Gin Palace, there for a time to drown his thoughts of an unhealthy and uncomfortable home. But the mischief goes on, and the sickly mother gives birth to a sickly progeny. Twenty-two out of every hundred children born in Manchester die within a year of their birth, and nearly as many more before they reach their fifth year; such as are then spared have many enemies to contend with, not the least powerful of which are the ash-pit poisons and their auxiliaries. Many of those who conquer in the fight, bear evidence of the hard struggle in after life; some live to occupy our gaols, and many die a drunkard's death. But it will be said all these evils cannot surely be attributed to the foul ashpits. Whilst free to admit that there are many other, and totally distinct causes, I maintain, nevertheless, that the filth in which our poorer neighbours are compelled to live is the primary and principal cause of their

homes being unhealthy and uncomfortable. As a consequence, disease and death overtake the weak—drunkenness, misery, and crime, too often those who are left. Cleanliness, it has been well said, is next to Godliness, and, until the poor can have clean and comfortable dwellings it is in vain to hope for any amelioration of their condition.

The revolutionary measures now being carried out amongst the ashpits of Salford, and the no less important changes contemplated by our city Council, give to the subject an especial interest at the present time. Let us see what these changes are. The Salford Corporation abolish the existing ashpit, but construct another one under the privy. The floor of the privy is the ashpit covering, and is hinged at one side to afford access for the scavengers. A step is fixed in front of the seat under which the ashes and cinders are thrown upon the faecal matters in the ashpit. From the back of the seat, and commencing a few inches below the level of it, a brick ventilating flue is carried up to such a height as local circumstances require, and, where the privies are underneath bedrooms, the ventilating flue is carried up through them to the roof. No drainage is provided for the ashpits, and they are made water-tight by cementing the sides and by flagging, laid upon puddle, in the bottom.

The Manchester Corporation retain the existing ashpits and roof them, but adopt a different mode of intermingling the ashes with the faeces. To accomplish this a hopper is constructed in the wall at the end of the privy seat, "the hopper to have a sloping flag, not less than 2 inches in thickness, built into the brickwork at an angle of not less than 35°, and extending as far as the hole in the privy seat. The top of the hopper is to be a wrought-iron grid not less than 15 inches by 12 inches, with bars $1\frac{3}{8}$ inches apart, fixed in a wooden frame built into the brickwork; the hopper to be covered with a flag so as to prevent any water getting in." Drainage is provided by means of an iron grid 9 inches square, placed on one side of the ashpit, and communicating with a 4-inch diameter ventilating pipe. The bottom of the ashpit is flagged, and the wall between scullery and ashpit lined

with Rochdale flags 5 feet high. If the privy seat is on the scullery side, a like flag must be placed against the wall as high as the under side of the seat; the whole properly fitted so as to prevent the contents of the ashpits leaking through into the scullery. The ashpit is ventilated by a flue of not less than 40 square inches, carried from the highest part along the scullery wall up the outside wall of the house until it reaches the chimney stack, in which it is to be carried to the full height adjoining the flue of the kitchen fire-place.

It is proposed, also, to ventilate the house-drains by means of the same flue, a 4-inch iron pipe being brought up for the purpose from the drain underneath the ashpit, and terminating a little below the bottom of the ventilating flue above described.

The Salford Corporation are forcing their plan upon the owners of existing privies; the Manchester Corporation intend, for a time, to limit theirs to *new* privies, but ultimately to compel the alteration of all existing ones.

The great and fatal objection to both schemes is the retention, as heretofore, of excrementitious matters in the ashpits. The minor, though by no means unimportant, defects are as follow:—

IN THE SALFORD PLAN.

That no drainage is provided, and that the carrying of a brick ventilating flue through any portion of a dwelling, more especially through a sleeping-room, is reprehensible.

IN THE MANCHESTER PLAN.

That the mode of drainage is objectionable, the inlet to the drain being placed in the side, instead of the bottom, of the ashpit, and untrapped, thereby permitting the escape of impure gases from the drains. The ventilation also is bad, a brick flue, as in the Salford plan, being carried through the interior of the dwellings.

The proposed Sewer Ventilation is also objectionable. Carbonic acid gas is heavier than atmospheric air, being in the proportion of 1.524 to 1. When heated in the sewers it will rise with other gases to the ceiling of the ashpit. Whether it will then ascend the brick

ventilating flue or settle in the ashpit will depend upon the state of the atmosphere and the existence or non-existence of a fire in the cottage kitchen. If it ascend the flue, and if the surrounding air be cooler than the discharged sewer gases, some portion will, in all probability, descend the nearest bedroom flue. It is well known that at times downward currents exist in these, and thus at times there would exist a free circulation of sewer gases through the dwelling, the bedroom flue serving as a down-cast and the kitchen flue as an up-cast.

It is, nevertheless, a source of satisfaction to find that the authorities of Manchester and Salford are impressed with the importance of this subject and the absolute necessity for some change. But I submit, with all due deference to their opinion, and to the opinions of their indefatigable medical officers, that the contemplated alterations will not accomplish the desired results. They may, and if carried out no doubt will, mitigate the nuisance, but they will not destroy it. The proposed changes, involving an expenditure of upwards of half-a-million sterling, mainly consist in an occasional covering of the night-soil with ashes, and the construction of ventilating flues which will, in many cases, create a nuisance where none at present exists. I submit that nothing short of a complete and speedy removal of all excrementitious matters from our midst will prove effective. Their retention has hitherto been a curse to the community and the only possible cure consists in their entire and speedy removal.

We are thus brought to a consideration of the water-closet system.

By this process all excreta are at once removed, and with the aid of proper drainage and appliances the removal is accomplished without giving rise to the slightest inconvenience or nuisance of any kind. A glazed earthenware hopper and trap constitute the simplest and best description of closet for cottages. The water supply is regulated by means of a small iron cistern, so constructed, that a given quantity of water is supplied when wanted without permitting

any waste. Eight gallons per day will suffice for each closet when used by one family only. The cost of the cistern, hopper, and trap will not exceed 25s., and the necessary soil and supply-pipes, fixing, and all other expenses, 25s. Thus for £2 10s. an efficient water-closet can be substituted for the existing privy. The minimum cost of the Salford alteration is £7, and the maximum £10. The cost of the alterations determined upon by the City Council will unquestionably exceed that of the Salford plan, although it has been officially stated that the expense will probably not exceed £4 for every new house.

By the water-closet system the soil is removed from the midst of dwellings, and conveyed miles away before decomposition sets in, the ashpit being retained for the reception of ashes only. By the present system, or by the adoption of either the Manchester or Salford improved privies, the soil is stored in the ashpits, there to putrefy until removed by the scavengers. Hitherto, this has been for a period of four to six months, the quantity of night-soil and ashes so stored in Manchester and Salford being at any given time at least 70,000 tons. It will, doubtless, be urged, by the advocates of improved privies, that the continual covering of the fæces with ashes will prevent their putrefaction. To this it may be replied that the model privies already constructed fail in effectually deodorising the soil. The ashes at command are insufficient in quantity—more especially in summer—and are, moreover, deficient in their antiseptic properties.

The principal ground on which the Corporation of Manchester has hitherto opposed the substitution of water-closets for privies has been that the rivers would be thereby still further polluted. The objection is a futile one, as it is patent to all that whether we adopt water-closets or not, the ordinary drainage of the city, estimated at 20 million gallons per day, cannot be much longer allowed to flow into and poison the streams. Intercepting sewers, therefore, are now required, and the cost of these will not be sensibly increased by the turning of water-closet refuse into them.

Another objection has reference to the condition of the existing sewers, it being urged that, if water-closets were adopted, an improved system of sewerage would be thereby rendered necessary. Of their state generally, at the present time, I am unable to speak with any degree of certainty. From the frequency it is found necessary to open and cleanse them, and judging, from the unscientific manner in which many of the old sewers have been, and the new ones still are, occasionally, constructed, it is highly probable that some reconstructions would be necessary. But the expenditure under this head must not be debitted to the closets. If the existing sewers are not self-cleansing, with water-closets, they are assuredly not so without them, and any sewer which retains solid matters is little better than a cess-pool, and therefore to be condemned.

Water-closets may justifiably be advocated on pecuniary grounds. By the privy system, an enormous amount of valuable manure is wasted. The solids become mixed with ashes, and other refuse, which renders them well nigh valueless. The liquid is partially absorbed by the ashes, and partially carried off by the drains. The Manchester Corporation, last year, removed from the city 124,735 tons of night-soil and ashes, at a cost of £19,852; of this sum, £3,806 was paid for railway carriage into Yorkshire, Nottinghamshire, and Lincolnshire. The nett amount received for the manure, after deducting railway charges, was £3,839 only, or 1s. 1d. per ton upon 69,468 tons sold, the remaining 55,257 tons, being unsaleable rubbish. Taking the population at 365,000, it will be seen that the manure sold realised the insignificant sum of 2½d. per head only, whilst the expenses attending the ash-pit cleansing averaged 10½d. per head.

Some decrease in these expenses might reasonably be anticipated if water-closets were general, and it is certain, that if the manure were conveyed in the ordinary 20 million gallons of sewage, direct to the land, instead of being, as at present, mixed with rubbish, and then sold to farmers in the surrounding counties, a very considerable increase of revenue would result.

Sewage is thus supplied in many places. At Edinburgh, 400 acres are irrigated with the sewage from about 125,000 of the population. This area is too limited, and much of the sewage is consequently passed by unutilized; but the land operated upon is rendered worth £27 per acre per annum, other lands in the immediate locality, but not irrigated, being worth from £3 to £4 per acre only. The increase represents 1s. 9d. per head of population contributing, and it is highly probable, that if treble the present area were irrigated, treble the result in money value would be produced. Croydon may also be instanced as another well-known example. In this case, the authorities were compelled to divert the sewage from the river Wandle, and accordingly they leased 250 acres of land, upon which it could be purified. The result has been an increase in the value of the land, from £2 to £25 per acre, the increase representing 5s. per individual contributing. Many other examples might be adduced to show the profitability of this mode of utilizing town sewage. In no case has it failed, and in no instance, when judiciously applied, has the land irrigated given off offensive exhalations.

The entire sewage of Manchester, Salford, and all the towns in the Irwell valley, comprising a population of 1,000,000, might be utilized upon Chat Moss and other lands lying westward, as far as Glazebrook. Probably, 7,500 acres would be sufficient for the purpose, but 5,000 acres additional could be obtained if necessary. No doubt, in the wet and swampy condition in which some portions of these lands now lie, it would be folly to add more liquid, but, if thoroughly drained and marled, there is no reason why they should not be rendered as productive as the Edinburgh and Croydon meadows. Peat, moreover, is an excellent deodorizer. It was not my intention, in the first instance, to dwell upon the subject of sewage utilization. I have, however, alluded to it very briefly, with the view of showing that the adoption of water-closets in lieu of privies would result in a great pecuniary benefit to the community. Instead of the night-soil of Manchester realising, as at present, 2½d. per head, or £4,000 per annum, by means

of water-closets and irrigation, it would realise at least 1s. 9d. per head, or £30,000 per annum.

In conclusion, I venture to recommend that this Association earnestly urge upon the Corporations of Manchester and Salford, the desirability of deferring further action in the alterations of privies and ash-pits, until the Rivers Pollution Commission Report is issued. The delay, however, not to extend to the *drainage* of ash-pits.

THOMAS WALKER, 16, BANK PARADE, SALFORD.